

1. Void as a Quantum Vacuum:

Let's assume the void can be modeled as a quantum vacuum, where energy fluctuations occur due to the Heisenberg Uncertainty Principle.

2. Energy Fluctuations: Represent energy fluctuations as quantum field perturbations.

3. Explosions as Quantum

Tunneling Events: Consider explosions (big bang events) as quantum tunneling events.

4. Energy to Matter Transition: Use principles from quantum field theory to represent the transition of energy to matter.

5. Matter Decay Cycle: Model the cycle of matter decaying back into the void using principles from thermodynamics and particle physics.

Variables and Functions

- ($E(t)$): Energy in the void as a function of time.
- (ΔE): Small fluctuation in energy.
- ($P(\Delta E)$): Probability of fluctuation (ΔE) causing an explosion.
- ($U(t)$): Function representing the formation of a universe at time (t).
- ($M(t)$): Matter formed in the universe as a function of time.
- (τ): Characteristic time for matter to decay back into energy.

1. Energy Fluctuations in the Void:

$[E(t) = E_0 + \Delta E(t)]$ Where
(E_0) is the baseline energy of
the void and ($\Delta E(t)$)
represents fluctuations over
time.

2. Probability of Explosion (Big Bang Event): $[P(\Delta E) = \exp\left(-\frac{(\Delta E - E_c)^2}{2\sigma^2}\right)]$

Where (E_c) is the critical energy fluctuation needed for an explosion and (σ) is the standard deviation of fluctuations.

3. Formation of Universe: $[U(t) = \Theta(P - P_c)]$ Where (Θ) is the Heaviside step function and (P_c) is the critical probability threshold for an explosion to result in a universe.

4. Energy to Matter Transition:

[$M(t) = k E(t) U(t)$] Where (k) is
a proportionality constant
converting energy to matter
within the universe.

5. Matter Decay Cycle:

$$\left[\frac{dM(t)}{dt} = -\frac{M(t)}{\tau} \right]$$
 Where (τ) is the characteristic decay time of matter back into energy.

6. Cycle of Matter Returning to Energy: $[E(t + \Delta t) = E(t) + \frac{M(t)}{\tau}]$ Where (Δt) is a small time increment.

Combined Formula

Combining these, the overall system can be described by:

$$E(t) = E_0 + \delta E(t)$$

$$P(\delta E) = \exp \left(-\frac{(\delta E - E_c)^2}{2\sigma^2} \right)$$

$$U(t) = \Theta(P(\delta E) - P_c)$$

$$M(t) = kE(t)U(t)$$

$$\frac{dM(t)}{dt} = -\frac{M(t)}{\tau}$$

1. Energy in the Void: The energy in the void ($E(t)$) fluctuates over time due to quantum effects.

2. Probability of Explosion: The probability of an energy fluctuation leading to an explosion is modeled by a Gaussian distribution centered around a critical energy (E_c).

3. Formation of Universes: A universe is formed when the probability of an explosion exceeds a critical threshold (P_c).

4. Transition from Energy to Matter: Once a universe is formed, energy in that universe is converted to matter.

5. Matter Decay Cycle: Matter decays back into energy over a characteristic time (τ), contributing to the energy in the void.